CLAIMS

1. A wavelength division multiplexing apparatus comprising:

a plurality of variable attenuators to which a plurality of optical signals of different wavelengths are respectively input, and which respectively attenuate the input optical signals with variable amounts of attenuation;

an optical combiner which combines optical outputs of the plurality of variable attenuators;

an optical amplifier which optically amplifies an optical output of the optical combiner;

a spectrum analyzer unit which measures the spectrum of an optical output of the optical amplifier, and controls each of the plurality of variable attenuators so as to maintain the optical power level of each wavelength at a predetermined level in accordance with the result of the measurement; and

optical shutoff means for shutting off an input of an optical signal of a wavelength not used among the plurality of optical signals.

2. A wavelength division multiplexing apparatus according to claim 1, wherein the optical shutoff means includes an optical switch provided at an input of each of the variable attenuators.

3. A wavelength division multiplexing apparatus according to claim 1, further comprising a transponder that includes a plurality of optical-to-electrical converters which respectively convert a plurality of optical signals of the same wavelength into a plurality of electrical signals and a plurality of electrical-to-optical converters which respectively convert the plurality of electrical signals into a plurality of optical signals of different wavelengths, and wherein:

the optical shutoff means includes a shutdown control circuit which selectively shuts down the plurality of electrical-to-optical converters.

4. A wavelength division multiplexing apparatus comprising:

a plurality of transponders which respectively convert a plurality of optical signals of the same wavelength into a plurality of optical signals of different wavelengths;

a plurality of variable attenuators to which the plurality of optical signals of different wavelengths are respectively input, and which respectively attenuate the input optical signals with variable amounts of attenuation;

an optical combiner which combines optical outputs of the plurality of variable attenuators;

an optical amplifier which optically amplifies an optical output of the optical combiner;

a wavelength monitoring device, provided between the transponders and the variable attenuators, for monitoring each optical signal for a wavelength deviation; and

a controller which sets the amount of attenuation to a maximum value for the optical attenuator corresponding to the optical signal that has been detected by the wavelength monitoring device as having a wavelength deviation greater than a predetermined value.